

A SHARED GLOBAL WORD LINE MAGNETIC RANDOM ACCESS MEMORY

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Field of the Invention

The invention relates generally to magnetic random access memory (MRAM). More particularly, the invention relates to MRAM having a shared global word line.

Background of the Invention

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5 MRAM devices generally include an array of memory cells. The memory cells are typically configured in rows and columns. Each row generally includes a corresponding word line, and each column generally includes a corresponding bit line. Figure 1 shows an MRAM array of memory cells 110, 120, 130, 140, and corresponding word lines (WL) and bit lines (BL). The MRAM memory cells 110, 120, 130, 140 are located at cross-points of the word lines and
10 the bit lines, and each MRAM memory cells 110, 120, 130, 140 stores a bit of information though an orientation of magnetization within the memory cells.

Figure 2 shows an MRAM memory cell 205 in greater detail. The MRAM memory cell 205 generally includes a soft magnetic region 210, a dielectric region 220 and a hard magnetic region 230. The orientation of magnetization within the soft magnetic region 210 is non-fixed,
15 and can assume two stable orientations as shown by the arrow M1. The hard magnetic region 230 (also referred to as a pinned magnetic region) has a fixed magnetic orientation as depicted by the arrow M2. The dielectric region 220 generally provides electrical insulation between the soft magnetic region 210 and the hard magnetic region 230.

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